

Enphase Energy

CPUC Workshop on Distributed Energy Resources and Data Use



Takeaways

- Data access is perceived as a major barrier to DER adoption
- However, DER resources can play a role in *overcoming* perceived barriers such as data availability and access, siting and interconnection
- Enphase Energy's platform with available data sources can provide services that allow for increased DER adoption
- Enphase supports the DRP Ruling with respect to data access. We feel utilities should provide system parameters *insofar* as it enables third parties to provide value-added services to utilities

Critical Questions Related to Data Access

1. What can DER Technology Companies do to increase DER resources?

Provide cost-effective service solutions for data collection and smart inverter enablement that are needed to increase DER integration capacity

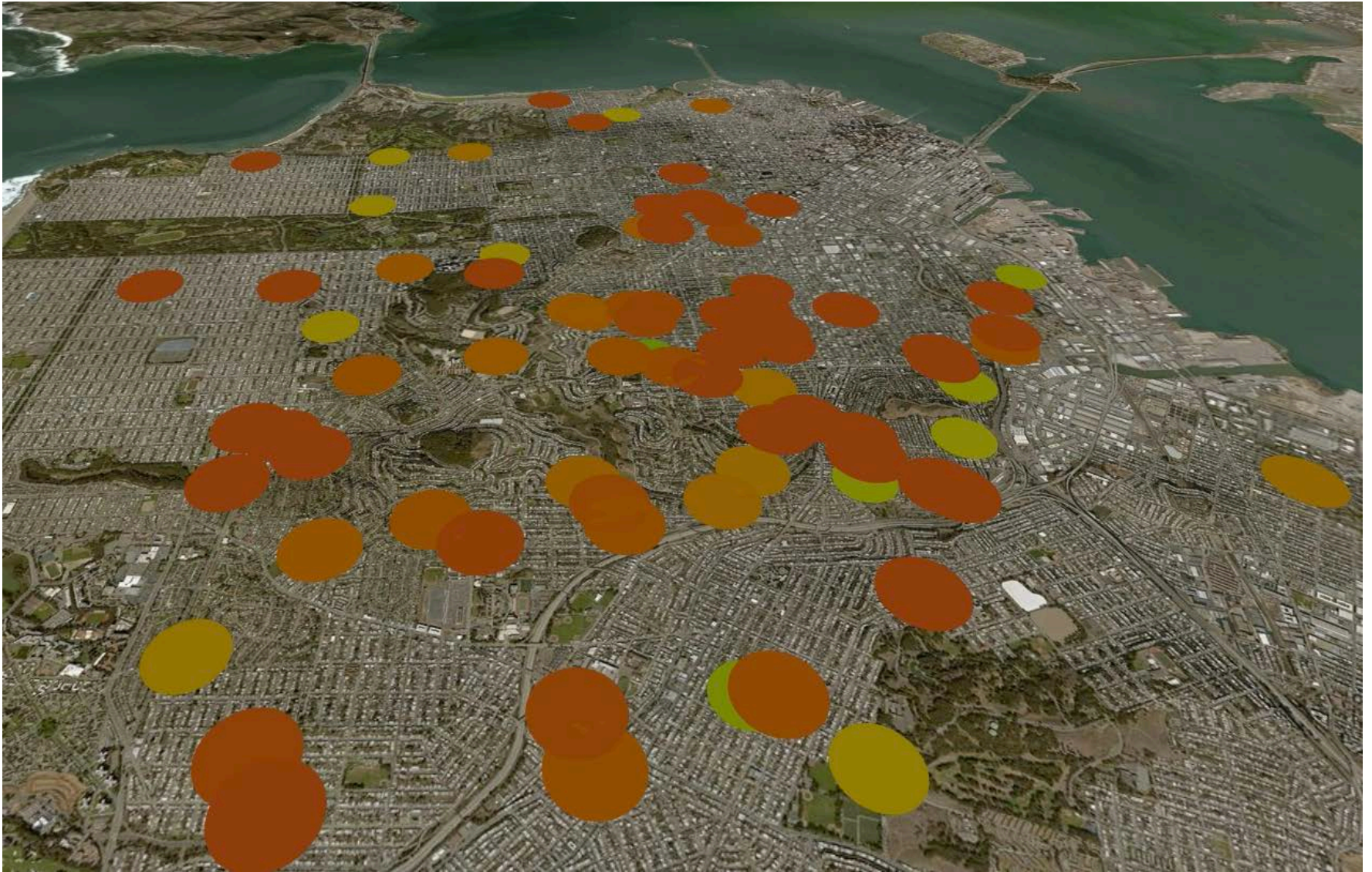
2. What information can DER Technology Companies provide to Utility Distribution Companies?

Provide DER data services and analyses to support interconnection capacity analyses, distribution planning, locational benefits, and remove known developmental barriers such as siting and interconnection

3. What information can Utility Distribution Companies provide to DER Technology Companies?

Distribution system information can be incorporated with DER data to improve analysis confidence; focus on collaborative study and pilots

Does the Data Exist Today?

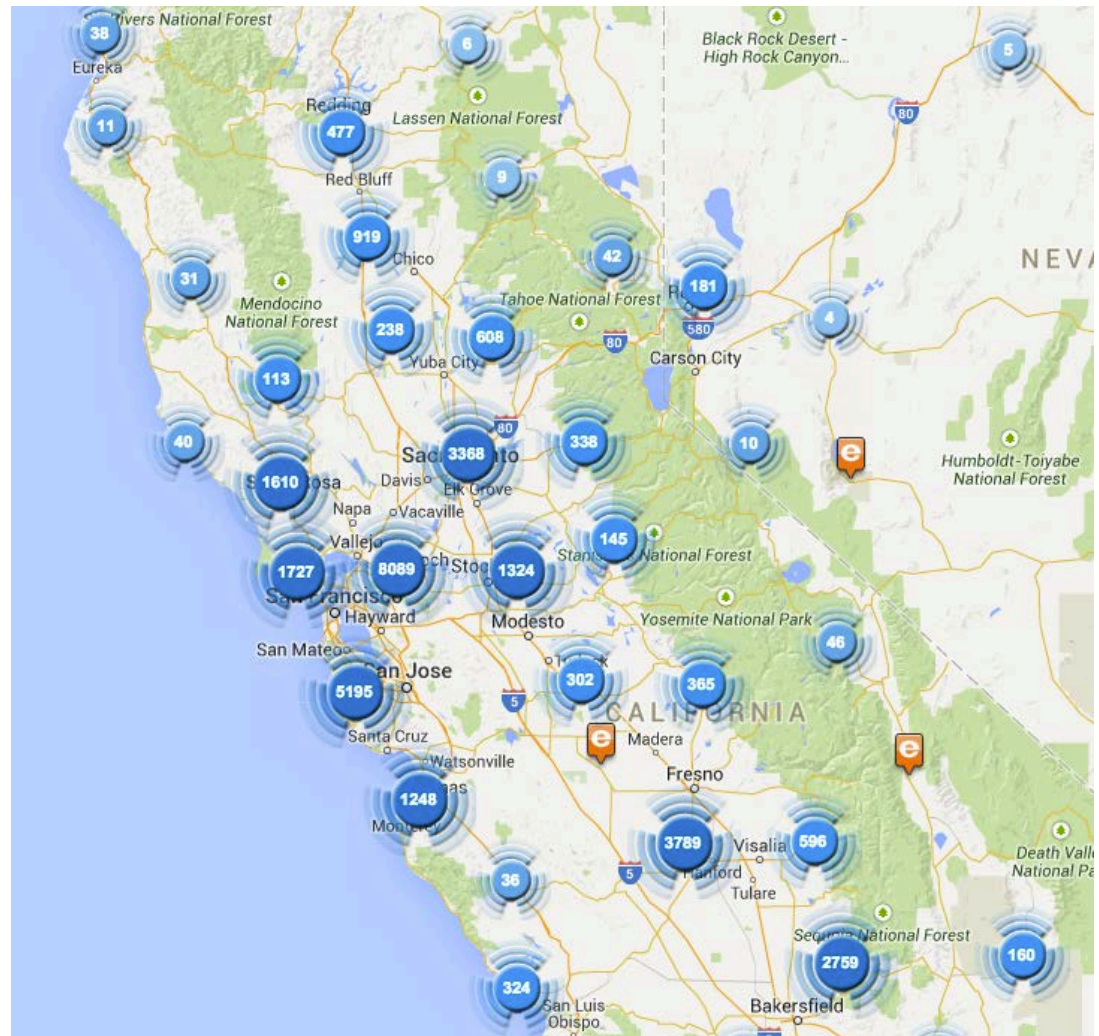


The Enphase Network

- **The value of DER resources increases relative to the scalability of the communications network.**
- **The number of DER assets that reside on the network also increases the value of the resources.**
 - Visibility and monitoring (planning, siting & interconnection)
 - Control (grid reliability & service offerings)
- **Robustness of the Enphase network and high number of systems enables a broad suite of service offerings.**
- **Minimum operating thresholds (Rule 21) are necessary to enable all resources to provide grid benefits.**
- **A systematic approach to deployment of DER is necessary to realize the true benefits of DER.**

The Enphase Network

- Over 75,000+ systems in California
- >1TB/day; power quality data every 5 mins.
- Over 7M+ microinverters and 250,000+ systems WW



Enphase Utility Services

Building on **innovative distributed energy products, a field service network and secure field communications**, Enphase delivers high-value, low-risk solutions for utility customers to monitor, control and optimize distributed energy resources

- Augment, not replace, utility automation, metering and control systems
- Provide services compatible with today and future Smart Grid strategies
- Provide maintainable service solutions that both enable increased DER integration and support evolving technical and market requirements

Utility Services and Application Examples

Network Insight

- Accurate, granular, and near real-time data for distributed generation production, distributed storage and grid telemetry measured at the network edge

- Interconnection Analysis
- Forecasting & Planning
- Support Operations
- Power Quality & Grid Monitoring

Distributed Resiliency and Control

- Cost-effective capability to command, control and optimize distributed energy resources
- Advanced control and dispatch of real power as well as coordination of real or reactive power for voltage optimization schemes

- Controlled Curtailment/Ramping
- Support Voltage Optimization
- Dispatched, Autonomous and Advanced Control Schemes
- Power Quality Correction

Focus today on delivering Network Insight and piloting advanced solutions

Next Steps

- **Define locational value of resources at the circuit level and support locational analysis with low cost, high value services**
- **Authorization for utilities to rate base services by third parties**
 - Least-cost, best fit
 - Reduced upfront capital investment
- **Continue to deliver on pilots and provide valuable information services to customers and stakeholders**



Daniel Lewis, Communications Networking

daniel.lewis@enphase.com

Joe Matamoros, Utility Services

joseph.matamoros@enphase.com

Jason Simon, Policy Strategy

jsimon@enphaseenergy.com